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ABSTRACT

This booklet provides information regarding how to incorporate assistive technology into developmentally appropriate play activities for infants and toddlers. A brief overview of normal development is given, from birth through 36 months. Specific ideas for adapting standard play activities for the enjoyment and education of children with physical disabilities are offered. A "How-To" section provides guidelines for making simple assistive devices at home, including Velcro bracelets, baby gyms, eye-gaze boards, loop tape messages, trays for feeder seats, mobiles for cribs, mercury switches, slant boards, ping pong ball switches, and battery adapters. A resource section offers lists of books, newsletters, catalogs, and programs. (Contains 12 references.) (PB)

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ASSISTIVE TECHNOLOGY AND PLAY

For Infants and Toddlers

ED 393 229

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Developed in Coordination With NC Assistive Technology Project

ASSISTIVE TECHNOLOGY AND PLAY
For Infants and Toddlers

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Introduction

Play is the window to a child's future! Through play, children learn about themselves, others, and objects within their world. Play is a natural method which enables children to interact with objects, communicate and form relationships. A child is given his or her first introduction to society through play; learning how to interact, share, and compete with others.

Play begins in infancy and the foundation of learning through play is formed in the first three years of life. The infant and toddler learn through sensorimotor play - how their body interacts with and effects objects and people in their environment. Peer interactions develop as the child approaches three years old, as play techniques progress from solitary play to parallel play, and on to associative and symbolic (pretend) play.

For a child who is physically challenged, their ability to learn and grow through play is compromised. Therefore, there is a need for adult interaction and direction in assisting the child through movements required for play. With this assistance, the child is given an opportunity to participate. Assistive technology plays a crucial part in the development of play for children with special needs. These children require adaptations or alternate means of accessing toys and other items; this can be accomplished by using assistive technology. Assistive technology can serve as the window that enables the child greater independence and active involvement in play.

Public Law 99-457 was enacted to provide services for children from birth to three years of age. Recently, the State of North Carolina has made 99-457 funding available for developing Regional Assistive Technology Centers targeting children from birth to three. Through these centers, equipment will be available for families and professionals to borrow for assessment and training of the child. Qualified personnel at these centers will also provide the services and training necessary to aid in incorporating assistive technology into the life of the child.

This booklet was designed, in cooperation with the NC Assistive Technology Project, to provide families and professionals with information regarding assistive technology that can be incorporated into developmentally appropriate play activities. A brief overview of normal development is provided with corresponding play activities and special considerations for adaptions for the child with special needs. Also included are "How-To" ideas for fabrication of simple technology adaptations, resources for materials, articles, and agencies dealing with assistive technology.

For Parents Only ...

A parent's job is never done! This statement is especially true of parents with children who have special needs. Not only are you consumed with regular parental duties; but you also have to take time to obtain your child services (i.e. evaluations, therapy, doctor visits, and daycare), network with professionals to gain knowledge of your child's needs, and be an advocate every step of the way for your child. These are tough issues and time consuming tasks!

Parents are faced with many issues regarding the care of their child with special needs. These issues center around obtaining support services to assist your child in reaching their maximum potential. Infants and toddlers with special needs have specific rights under Public Law 99-457, which entitle them to early intervention services. As your child's advocate, it is your responsibility to pursue appropriate early intervention services in your area. There are many professionals in the community to help you understand how to best help your child: physicians, therapists, and early intervention teachers. The earlier you and your child get services from people trained in motor and cognitive development, the greater impact can be made on your child's skill development.

Many times parents have concerns about their child's development long before the problems are identified by the family practitioner. Don't be afraid to ask questions; you are the consumer, and you have the right to have their time to listen and share information with you. If your questions are not answered to your satisfaction, request other resources for a second opinion.

Once your child has been identified for early intervention services, an Individualized Family Service Plan (IFSP) should be developed. An IFSP is a joint planning effort between parents and professionals who work with your child. During this meeting, goals are developed, focusing on the skills that your child needs to develop, while also addressing family needs centering around the child. Assistive technology needs can be incorporated into the child's IFSP. Therefore, parents should be resourceful in getting these needs stated in the IFSP to insure their use with your child.

The assistive technology needs of your child can be cost consuming, especially as your child grows and new technology is needed. Funding of assistive technology is at times difficult to obtain. This is a time when parents benefit from networking with professionals and organizations familiar with assistive technology (see Programs, page 50) to find out all of the in's and out's of getting your child's technology funded.

This booklet is just a beginning, to give you ideas about how to best use simple adaptations and technology to help your child succeed at play. Please keep in mind that the "normal development" pages are just guidelines - all children move at different paces, and there is a very wide range of "normal". A parent should in no way consider motor development to be an indicator of a child's cognitive potential or vice versa. The activity ideas are not for designated ages, but skill levels. These activities should not be used as part of a structured "exercise" program. Instead, use the ideas throughout the day in your normal play interactions with your child - and have FUN !!!

Parent's, your job is an overwhelming task; but through networking, knowing your rights and advocating for your child, the end result can be achieved. Don't give up and always trust your instincts. Remember, you know your child best!

Normal Development
0-3 Months

Motor

- grasp reflex
- when lying on tummy can turn head
- when lying on back, can hold head at midline and bring hands to midline
- beginning reaching

Receptive Language

- shows awareness of speaker
- quieted by sound of a familiar voice
- reacts to environment
- responds to touch, temperature and people

Expressive Language

- makes noises in response to caregiver's smile and talk
- coos to caregivers
- variations in vocalizations (i.e. hunger cry, express pleasure)
- laughs at amusing activities
- smiles purposefully in response to caregivers face or voice

Senses

- hears, responds to sound
- notices bright colors
- startles to loud noise
- momentarily looks at object
- focuses on caregivers face

Play

- begins to track a slow moving object using eye and head movements
- begins exploration through mouthing of objects
- visual hand regard (ie. watching hands)
- clasp hands at midline
- mouths and sucks hands

ADAPTIVE PLAY ACTIVITY

0-3 month level

Purpose: To promote visual hand regard (child looking at hands).

Activity:
- Place a brightly colored rattle or black and white toy in child's hand.
- Shake rattle within child's visual field in order to encourage the child to look towards their hand.
- If the child is unable to hold object, the caregiver can help by using hand over hand assistance.

Special Considerations:

- For the child who is unable to physically maintain a grasp the toy can be adapted with velcro. Utilizing a 1/2 inch piece of elastic with hook velcro make a bracelet for the child's hand and place loop velcro on toy (see "how-to" section, page 42).

- For the child who has difficulty with adequate head control, positioning the child in sidelying may help the child with visual hand regard (see Positioning for Play in Resource Book section).

- For a child who is caught in a strong head turning response to one side (ATNR), a supported sitting position with assist to align head in midline may help. Sidelying as noted above also seems to help a child with an obligatory head turning response.

ADAPTIVE PLAY ACTIVITY

0-3 month level

Purpose: To increase visual attending to objects and faces.

Activity:
- Support child in front of you so you are face to face.
- The caregiver selects black and white or brightly colored objects to attract the child's gaze.
- Move objects slowly from side to side to elicit beginning tracking skills.
- The caregiver can also lean over the child and talk softly or vocalize while child attends to their face. Caregiver can move their own face slowly from side to side to improve child's tracking skills.

Special Considerations:

In case of visual impairment:
- the object should be held closer to the child's face
- use bright lights (flashlight), shiny or fluorescent objects
- use toys that make sounds.

ADAPTIVE PLAY ACTIVITY

0-3 month level

Purpose: To encourage beginning reaching skills.

Activity:

- Child is lying on back on a blanket or in crib, or reclined in seating device
- Toys or mobiles are suspended within arms reach above or in front of the child.
- The caregiver should draw the child's attention to the toy by moving it.
- Caregiver can initially assist child in lifting arms so that hands contact objects and make them move.
- If it is appropriate to utilize switches, place a switch near the child's hands to that random movements may strike the switch to activiate a sound or light display; this will reinforce certain movments early on, and will promote more reaching.

Special Considerations:

- Attach bells, rattles and other noise making toys to a mobile or baby gym.
- Homemade mobiles can be created by adding brightly colored paints, cut out shapes, etc. to paper plates or cardboard. These objects can be attached to string or elastic to be positioned above the child. (For safety, child shoud not be left unattended with mobile if elastic is used).
- Baby gyms can be constructed using PVC piping for use while the child is not lying in the crib (see "How-To"section, page 42).
- If the child has tightly fisted hands, it may be helpful to position the mobile, rattles, or baby gym so that the back of the child's hand will touch the object first; this may encourage hand opening.
- If the child is unable to reach forward easily while lying supin (on their back), it may be helpful to try a sidelying or supported sitting position.

ADAPTIVE PLAY ACTIVITY

0-3 month level

Purpose: To bring hands together, and hands to mouth.

Activity:
- While child is in infant seat or on floor, assist child to bring hands together during songs, music or games (ie. pat-a-cake).
- When the child has hands together, assist them in bringing their hands to mouth to facilitate mouthing or sucking behaviors.

Special Considerations:

For the child who has difficulty bringing hands to midline:
- The child can be in sidelying which naturally allows the hands to come together at midline; the child is placed on their side and can besupported by small baby pillows behind their back and under their head.
- Place child in infant seat with small pillows behind arms and shoulders to encourage arms positioned forward and together at midline.
- A switch can be held in one of the infant's hands, using velcro bracelet or parent assistance; when hands are brought to midline, the switch will activate the toy, and increase the child's awareness of midline play.

For the child who tends to arch backwards a curled up position in an infant seat or in a parent's lap may help break up the arching pattern, allowing the baby to curl up and bring hands to mouth.

Normal Development
3-6 Months

Motor

- when on tummy, holds head upright and at midline
- reaches with both hands
- hands together when lying on back
- hands to knees when lying on back
- consistently brings hands and objects to mouth
- visually directed reaching
- good head control
- exhibits swimming movements when on tummy
- when on back they put hands to feet and feet to mouth
- beginning to roll
- supported sitting
- patting of objects and scratching surfaces
- when on tummy can support self on extended arms
- voluntary grasp of objects

Receptive Language

- stops crying when spoken to
- turns head towards a voice
- recognizes own name
- discriminates between threatening and friendly voices
- follows a parents gaze
- anticipates feeding

Expressive Language

- maintains eye contact
- imitates facial expressions
- vocalizes in response to singing
- takes turns vocalizing
- initiates "talking"
- vocalizes to express displeasure
- laughs
- increases quantity and variety of sounds
- babbles
- produces different cries for different reasons
- smiles spontaneously to human contact and when playing alone

Play

- shakes rattle
- turns and examines objects
- smiles at self in mirror
- pats bottle during feeding
- has a favorite thing to touch
- uses hand and mouth to explore
- enjoys play with movement (ie. frolicking play)
- inspects objects visually, turning to see all angles

ADAPTIVE PLAY ACTIVITY

3-6 month level

Purpose: To increase head control.

Activity:
- While caregiver is seated, either in chair or on floor, sit the child on your lap, facing you and straddling one leg.
- Slowly tilt child slightly to the right or left, looking for the child to maintain their head upright .

Special Considerations:

- For the child with weak neck muscles, a mercury switch and toy can be used to motivate the child to keep head upright. A mercury switch can be used for promoting head control while the child is positioned on their stomach or while they are seated. The mercury switch can be attached to a child's headband or hair clip (see "How-To" section, page 45), and will reward the child for maintaining head upright by activating the toy.

- While the child is in supported seating (good sitting posture is necessary to maximize head control), a switch can be attached to the seat back at head level. Again, this will be activated when the child's head is in upright position, rewarding proper head control.

- Using a universal switch mount and big red switch (both available from Ablenet), position switch above the child's head while child is lying on stomach, so they can active the toy by lifting their head.

- For the child who is just beginning to lift up their head, it may also be helpful for the caregiver to activate the toy when the baby attempt to lift their head, to reinforce the beginning movement patterns for head control.

ADAPTIVE PLAY ACTIVITY

3-6 month level

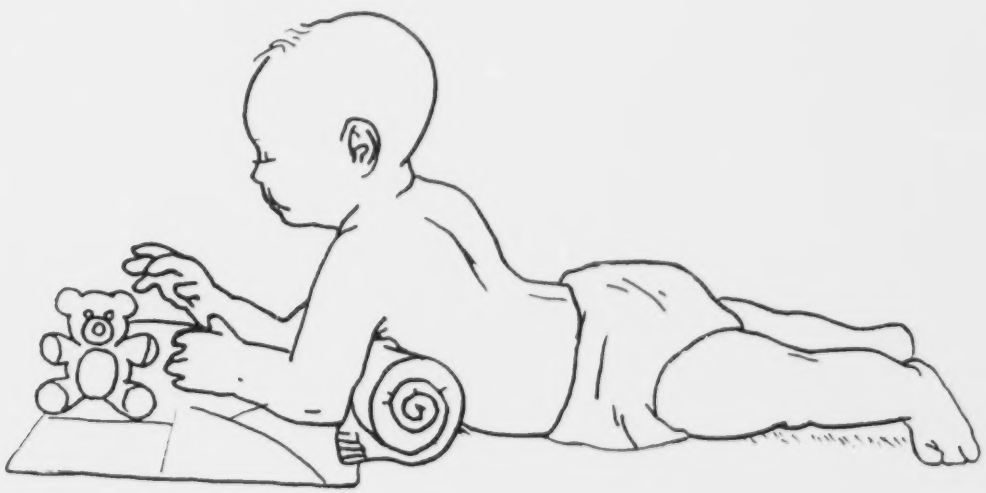
Purpose: To promote hand use and exploration.

Activity:

- While the child is lying on their stomach and supporting themselves up on their elbows, caregiver places object/ toy either in front of or beside of child, within arms reach. Child may initially need caregiver's assistance to reach out.
- Encourage the child to explore various textures by patting, scratching, or feeling surfaces. A texture mat can be made for this activity by sewing together a variety of materials such as: silk, suede, corduroy, netting, lambswool, burlap, etc.
- This is a prime time to begin exploring the use of simple switch activated toys Switches will reinforce the concept of cause and effect; the child's actions have an effect on their environment.

Special Considerations:

- For the visually impaired child, place a music box or squeak toy in front of the child to attract the child's attention.
- For the child who is unable to prop up on elbows independently, place a towel roll under chest and armpits to give added support.
- For the child who cannot use their hands effectively while lying on their stomach, they will need to be placed in a seating device with objects or texture mat placed in front of them.
- For the child who cannot tolerate lying on their stomach, place the child on parent's stomach (parent reclined) and place texture mat on parent's chest.
- A box can be cut out and inverted to form a "table" for the child, to provide a surface area for switches and toys for the child to play with while positioned in their infant seat or other supported seating.



ADAPTIVE PLAY ACTIVITY

3-6 month level

Purpose: To promote self awareness and vocalizations.

Activity:
- Caregiver sits with the baby on their lap, both facing towards a mirror.
- Talk about who you see in the mirror while saying the baby's name. Also name facial features while pointing to them, both on yourself and on baby (touching baby's facial features gently).
- Model mouth movements and nonspeech sounds (i.e. stick out tongue, pucker lips, raspberries, tongue clicks) , encouraging child to imitate.
- Toys are available which move when there is a sound, and others which repeat what the child says.

Special Considerations:

- For the child who is hard to stimulate, mirrors are available that provide auditory as well as visual stimulation (available through Crestwood Company). Many of these mirrors have actions or music that are activated by the child's voice.

- The child with visual impairments can explore their facial features through touch; you touch the child's face and help the child to touch their own face. For imitation of vocalizations, the caregiver can place the child's hand to their mouth while vocalizing so the child can feel the lip position and feel the vibrations.

ADAPTIVE PLAY ACTIVITY

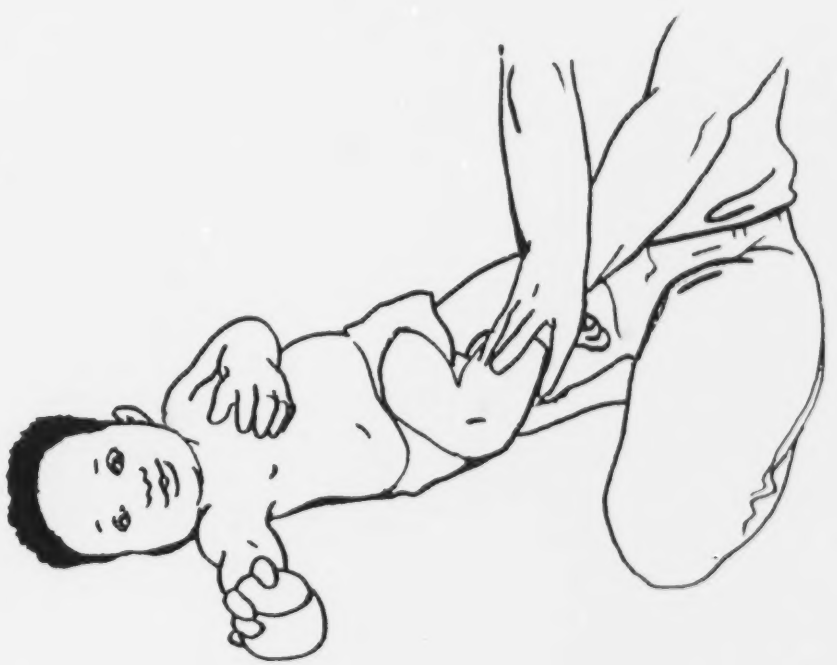
3-6 month level

Purpose: To facilitate rolling.

Activity:
- Caregiver sits cross-legged on floor with child lying on back with hips flexed (legs bent forward) and small pillow under his head.
- Place a toy to one side, roll child's bottom slightly towards toy and see if child follows with arms and head to reach toy.
- Try to both the right and left side.

Special Considerations:

- If the child is unable to reach for a toy, place a switch in a position where the child will roll onto it, activating the toy.
- Mats are available commercially (Crestwood Company) that when depressed make music or noise. Child can be placed on this mat, and it may motivate the child to roll.
- Sometimes it helps to facilitate the child going down a slow incline, which allows gravity to assist with rolling.
- Place switch up above infant's feet. The movement of kicking upwards in order to activate the toy is helpfull as a pre-rolling skill.



Normal Development
6-9 Months

Motor

- combat crawls (ie. pulling forward on tummy using arm and leg movements)
- gaining independence in sitting
- begins to pull to stand
- creeps
- transitions from sitting to hands and knees for crawling
- bangs and mouths objects
- transfers object from hand to hand
- voluntary release of objects
- pokes with index finger
- grasps with thumb and fingers

Receptive Language

- recognizes family members names
- responds with gesture to "come up" or "want up"
- attends to music or singing
- responds to "no" most of the time
- maintains attention to a speaker
- responds to sounds when the source is not visible
- attends to pictures
- waves in response to "bye-bye"
- responds to anger or praise in your voice

Expressive Language

- vocalizes four different syllables ("ma", "pa", "ba", "da", etc.)
- vocalizes in response to objects that move
- vocalizes during games
- consistently imitates nonspeech sounds (ie. raspberry, cough, etc.)
- sings along with a familiar song
- becomes more lively with familiar people
- uses gesture and vocalization to protest
- vocalizes to get peoples attention

Play

- smiles and laughs during games
- interacts with objects using less mouthing and banging
- moves to get toys that are out of reach
- searches for hidden objects
- takes things out of containers
- reaches for self in mirror

ADAPTIVE PLAY ACTIVITY

6-9 month level

Purpose: To gain attention of others through vocalizations.

Activity:
- The caregiver places child in seat with various toys, and walks away (still within child's sight). Wait for child to vocalize. Upon vocalization, immediately turn and give attention to the child. This immediate response will reinforce to the child that their vocalizations have meaning, and can effect other people's actions in their environment.
- While playing a game with the child, the caregiver comes to an abrupt stop. Once the child vocalizes, the caregiver says " play more?" and continues to play the game.

Special Considerations:

- For the child who is unable to vocalize, a call bell or chime switch can be mounted near the child, so they may use it to gain the attention of others.
- With an older child who is functioning at this level, loop tapes can be used, with a pre-recorded message (i.e. "play ?", " more"). Loop tapes can be activated utilizing a switch connected to a tape recorder (see "how- to" section, page 43).
- A baby monitor can be used by the caregiver to listen to vocalizations when child is in another room, yet not loud enough to be heard from one room to another. The parent can reinforce the vocalizations appropriately.

ADAPTIVE PLAY ACTIVITY

6-9 month level

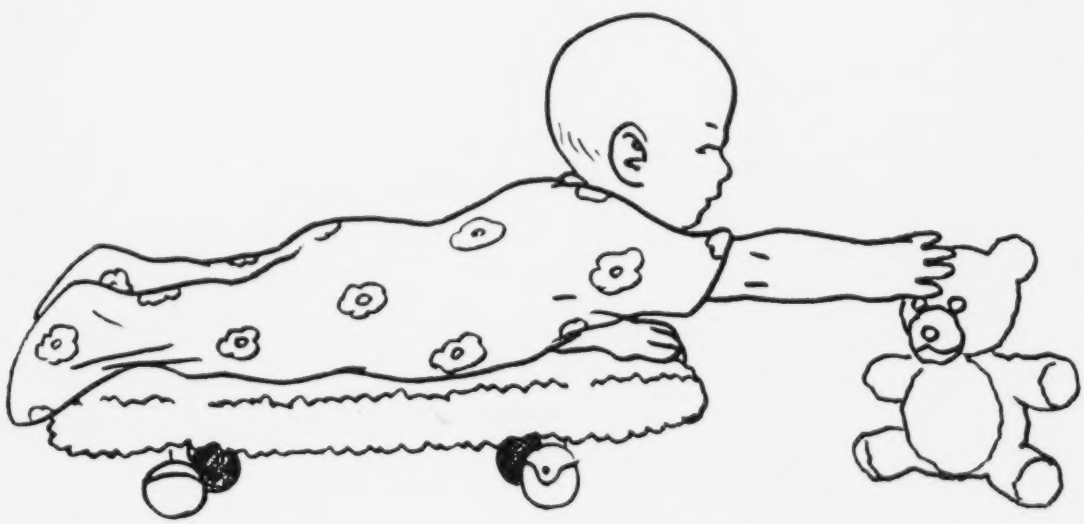
Purpose: Child moves to get objects that are out of reach.

Activity:
- Objects which are motivating to the child are placed out of reach, child is encouraged to crawl or creep independently to obtain the desired object.
- Caregiver must be aware to not always hand toys directly to the child, or child will not be motivated to move out into his environment in search of toys.

Special Considerations:

For children who cannot use leg movement for mobility the following adaptations can be used:
- put child on stomach on scooter board or jet mobile, and encourage child to propel self with arms
- for the older child operating at this developmental level, child can be seated in an electric cart activated by a switch or joystick

For children who cannot use arm movements for mobility, leg movements can be used by placing child in a seating device, with feet contacting the floor (ie. feeder seat on casters).



ADAPTIVE PLAY ACTIVITY

6-9 month level

Purpose: To increase voluntary grasp and manipulation of objects.

Activity:
- While seated in an upright position, caregiver places toys within the child's reach. Objects should be an appropriate size to fit the child's hand.
- The caregiver may help the child pick up an object and turn it around using both of the child's hands.
- The caregiver may point out different colors, textures, holes, etc. to the child and assist the child to look at what they are describing.

Special Considerations:

For children who are unable to maintain grasp the following adaptations can be utilized:
- a velcro hand bracelet (see "How-to" section, pg 42) can be used to keep object in hand
- loops can be attached onto the outside of toy for extended finger to catch and lift up
- for flat objects (ie. pictures, puzzle pieces, etc.) empty thread spools can be glued to these items to allow for easy grasp.
- a velcro mitt can be worn by the child and velcro can be placed onobjects to allow the child to pick things up, take objects out of containers, etc.

Making a table from a cardboard box to allow for placement of switches or toys while the child is sitting on the floor or in infant seat.

ADAPTIVE PLAY ACTIVITY

6-9 month level

Purpose: To interact with objects using less mouthing and banging.

Activity:

- The caregiver models various activities that can be done with toys such as: rolling a ball, pushing a car, stacking blocks, etc.
- In order to begin playing with toys more appropriately, child is encouraged to imitate play modeled by caregiver.
- Hand over hand assistance by the caregiver may be needed initially to help the child perform the appropriate action.

Special Considerations:

For a child who is physically unable to perform the above activities:

- switches offer another method of interaction with toys. Ready -made switch toys can be purchased through catalogs or toys may be adapted at home. (see "how-to" section, page 47).
- even though the child cannot perform the action independently, they will still be able to learn by the caregiver assisting them to perform the action (i.e. the child will learn what a comb is if the caregiver helps them comb their hair with it rather than if it is just named to the child)

Normal Development
9-12 Months

Motor

- walks with one hand held
- cruises around furniture
- plays using both hands while in sitting
- pincer grasp
- throws objects
- beginning to self finger feed
- beginning to use hands separately, one to hold and one to work

Receptive Language

- attends to new words
- gives objects upon verbal request
- begins to follow simple commands
- looks at familiar objects and people when named
- understands simple questions
- identifies two body parts on self

Expressive Language

- vocalizes to call others
- spontaneously requests to be picked up by reaching upward
- extends arms to show an object
- says mama and dada meaningfully
- uses facial expressions to convey feelings
- uses one word to convey an entire thought
- vocalizes a desire for a change in activities
- imitates the name of familiar objects

Play

- covers face with towel during peek-a-boo
- pushes a toy car
- imitates stirring with a spoon
- puts objects in container
- imitates movements such as pat-a-cake and banging objects together
- begins to explore spacial concepts using movement (ie. up, down, on, off)

ADAPTIVE PLAY ACTIVITY

9-12 month level

Purpose: To play with both hands in unsupported sitting.

Activity: When sitting unsupported the child is given activities which encourage the use of both hands simultaneously. Activity suggestions are listed below:

- playing with popbeads
- banging cymbals or blocks together
- placing objects into small container
- looking at baby books

Special Considerations:

- For the child who is unable to sit independently, seating systems can be utilized with a tray attached. Such systems are: corner chairs, feeder seats (see "how-to " section, pg 44), travel chairs, and custom seating systems. The child can be positioned sitting on the floor, leaning them up against the sofa and using sofa cusions to support on the sides.
- If the child has one side of their body that is more involved, special assistancemay beneeded to help the child maintain grasp of objects with more affected hand by manual assist or velcro bracelet.

ADAPTIVE PLAY ACTIVITY

9-12 month level

Purpose: To explore spatial concepts using movement.

Activity:
- The caregiver will provide toys for the child such as blocks and a box.
- The caregiver encourages the child to place the blocks "on" and "off" the box and "up" in the air and "down" on the floor.
- Whole body movements can be incorporated to teach these concepts as well; by having the child stand up, squat down, sit on achair and get off a chair, etc.

Special Consideration:

For children who are unable to move their own body through space:
- The caregiver can pick them up, put them down, put them in the crib, and take them out. The caregiver verbally explains to the child where they are in space as they go through the activity, sound effects can be very motivating to the child.
- The child can begin to use a computer screen to watch an object go "up", "over", "down", etc., in response to a parent manipulating the mouse or keyboard and discussing the movements.
- Scooterboards can be used for assisted movement.
- Battery adapted toys, such as the penguins and seals which climb up and slide down the track, can be switch activated to help teach "up/down" concepts.

ADAPTIVE PLAY ACTIVITY

9-12 month level

Purpose: Looks at and points to familiar objects and people when named.

Activity:
- While in a sitting position, the caregiver interacts with the child using toys, storybooks, photographs and common objects.
- The child points to the item named by the caregiver.
- A notebook containing photos of the child's favorite toys, activities and people is a motivating way of engaging the child in this activity.

Special Considerations:

- If the child does not have isolated finger movement:
  - special tools or splinting can be done to facilitate pointing
  - use larger size pictures or photos so the child can use whole hand (and whole arm movements) to point versus isolating finger movement
- For the child who is visually impaired, photos may need to be enlarged or use illustrations with high contrast (i.e. black and white)
- For some children, books with photographs are better understood than those books that have drawings of the objects; illustrations may be too abstract.
- For the child who does not have volitional arm movement, an eyegaze board can be used (see "How-to" section, page 43).

ADAPTIVE PLAY ACTIVITY

9-12 month level

Purpose: To begin to use hands separately; one hand to hold/stabilize objects while the other hand works.

Activity: While seated, the child will use their one hand to manipulate objects while the other hand stabilizes. For example:

- holding drum while banging with other hand
- holding pail while scooping sand into it with other hand
- holding base while stacking rings

Special Considerations:

For the child who is unable to use their hand to stabilize an object, items can be used to assist in stabilizing:

- dycem (acts as nonskid surface)
- velcro or dual lock
- C-clamp item to surface
- clipboard for holding paper
- cookie sheets or surface areas with boundaries assist in keeping item within child's reach

Normal Development
12-18 Months

Motor

- stands independently
- walks alone, with arms out for balance ("high guard")
- begins to climb stairs
- able to move from kneeling up to stand
- grasp and release is becoming more precise
- holds and drinks from cup
- turns pages
- towers two cubes

Receptive Language

- responds to "give me" command
- maintains attention to pictures
- understands some prepositions
- points to two action words in pictures
- understands new words
- identifies three to six body parts on self or doll
- responds to other children's vocalizations
- completes two request with one object
- "understands" fifty words
- identifies objects by category
- imitates other children

Expressive Language

- shakes head "no"
- says 10 to 15 words spontaneously
- uses true words within jargon-like utterances
- imitates new words spontaneously
- imitates three animal sounds
- sings independently
- prefers speech over gestures
- asks "What's that?" and requests "more"
- uses speech to name, refuse, call, greet, protest and express feelings

Play

- plays with a toy in different ways
- shows interest in books and associates picture to object
- demonstrates functional use of objects directed toward their own body/self
- puts one object inside another
- problem solves by trial and error
- plays ball with adults
- groups and sorts objects in play
- imitates a scribble

ADAPTIVE PLAY ACTIVITY

12-18 month level

Purpose: To show interest in books and associate pictures to objects.

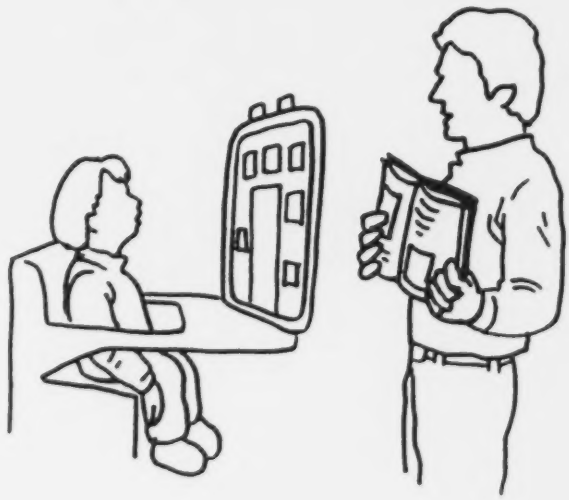
Activity:

- One of the most beneficial activities a caregiver can do with their child is to look at and read books with them.
- Be careful to select books that are developmentally appropriate for the child.
- The caregiver should point out people, objects, places, etc. within the book to allow for vocabulary development and learning.
- Give the child opportunities to gesture or point to things in the book while commenting on them.
- Books should be read in an animated voice to experience the book in a more realistic manner. Use different voices for characters, sounds for objects or items being discussed in the book to allow for maximum enjoyment and imagination.
- Take photographs of the child's toys and incorporate into a simple matching game using the photos and corresponding objects - this will help the child associate pictures to objects.

Special Considerations:

For children who are physically involved and/or nonverbal, adaptations should be made to allow them interaction with books and pictures:

- pictures taken from books can be mounted on an eye gaze board
- place repeated lines from specific books on loop tapes and allow the child to activate a switch to speak the lines at appropriate times in the story
- develop photo boards for the child to request toys or items to talk about within the book by eye gaze or pointing
- buy big/oversized books for children who are visually or motorically impaired
- place textured materials in book (i.e., yarn on a characters hair, fur on a bears tummy)
- make your own books that center around the child's own experiences or favorite toys, people, etc. through computer software that is set up for story creation (i.e., Big Book Maker, Monsters and Make Believe, etc.)



ADAPTIVE PLAY ACTIVITY

12-18 month level

Purpose: Child demonstrates purposeful and meaningful use of objects

Activity:

- Provide child with toys that relate to daily activities and model their functional use in play. For example: brush a doll's hair, feed dolls, stir with a spoon, drive a truck, hammer nails, etc.
- Give the objects to the child and allow him/her to explore and interact with them.
- The child will first begin to demonstrate appropriate use on their own self for beginning awareness of pretend play.

Special Considerations:

- If your child cannot perform these play activities independently, these are activities that are appropriate to be done with assistance by caregiver.
  - The child will learn about the function of the objects through hand over hand assistance (sensorimotor learning) by the caregiver.
  - The child can use a communication board to indicate the action they want carried out.

- Caregiver presents two objects and says "It's time to brush your hair. What do we use to brush our hair?" Child can identify object through eye gaze, signing "more", or reaching out.

ADAPTIVE PLAY ACTIVITY

12-18 month level

Purpose: Child groups and sorts objects in play.

Activity: After providing the child with a group of objects (i.e. blocks and rings), help the child to place them into two separate piles (one pile of blocks and one pile of rings).

Special Considerations:

For the child who is unable to physically separate objects, the child can eye gaze to indicate to the caregiver where the object belongs.

For the child with impaired ability to pick up and move items, the child can:
- push object with whole arm movement into appropriate pile
- adapt items so they can be grasped with gross grasp (glue spools onto small toys, etc.)

ADAPTIVE PLAY ACTIVITY

12-18 month level

Purpose: The child requests continuation of play activity by expressing "more".

Activity:
- After engaging the child in an activity, bring the activity to a stop.
- Encourage the child to verbalize "more" rather than whining, crying, or pointing when he wants the activity to continue.
- This may need to be modeled by caregiver initially.

Special Considerations:

For the child who is non-verbal, several methods of indicating "more" can be used:
- loop tape, with message "more"
- child utilizes sign language for "more"
- touch or eyegaze to picture symbol representing "more"

Utilize special positioning to allow the child the best chance of success. This is **not** the time to work on head control or trunk control. Instead, make sure the child is appropriately positioned so they are able to focus on the cognitive and fine motor aspects of the task.

Normal Development
18-24 Months

Motor

- walks well
- walks while pushing, pulling or carrying something
- goes up and down stairs
- runs
- walks backwards
- concentrates on refining fine motor activities
- begins to show hand preference
- self-feeds with spoon

Receptive Language

- chooses five familiar objects upon request
- identifies pictures when named
- follows novel commands
- follows a two step related command
- understands new words rapidly
- understands meaning of action words

Expressive Language

- transitions from single words to two word phrases
- verbalizes two different needs
- relates personal experiences
- uses early pronouns occasionally (ie. me, mine)
- takes turns talking during conversation
- no more that 25 % of speech is intelligible to strangers

Play

- imitates housework activities
- stacks and assembles toys and objects
- begins to string beads
- turns pages of a book
- pretends to dance to music
- pretend play performing actions on dolls or other people
- scribbles

ADAPTIVE PLAY ACTIVITY

18-24 month level

Purpose: To stack and assemble toys and objects.

Activity:

- Provide the child with blocks, rings, etc. to stack or assemble.
- Demonstrate how to play with the objects and let the child assemble and take apart the items to learn the task.
- Assist the child as necessary to allow for success.

Special Considerations:

For the child who is unable to play with the items independently due to motor difficulties:

- Put velcro on the objects and place a velcro mitt or bracelet on the child'shand so that they can grasp items easier
- Use hand over hand assistance; the child can learn as much by being assisted to experience the motions of play
- Stabilize the bottom object with velcro, C-clamp, dual lock, or dicem so that one hand can be free to assist with assembling.
- Position child in seating device that will support trunk, so that the child has a stable base off of which to perform coordinated hand movements.
- Allow the child to watch you stack items; wait for child'seye gaze or arm movement to indicate the child's desire for you to place additional blocks or rings.

ADAPTIVE PLAY ACTIVITY

18-24 month level

Purpose: To turn pages of books and interact with books appropriately.

Activity:
- Supply the child with age appropriate books.
- Look through the books with the child, allowing them to interact independently by turning pages, and pointing out items of interest.
- Ask the child questions about the book and it's characters.

Special Considerations:

For the child who is unable to physically hold or manipulate books some adaptations can be made:
- use of styrofoam packing peanuts with a paper clip stuck through or double stick carpet tape attached to foam squares can be placed on the right side of book pages ; this allows space between the pages for the child with lack of fine motor coordination to turn pages independently
- loop tapes attached to a switch with prerecorded messages "turn the page" can be activated to request moving on in the book
- computer software that contains stories is available that allows the child to turn the pages of the book independently by activating a switch, touch window or other peripheral device (i.e., Jimmy Jumper, Story Time, etc.)
- place stars or other markers at the bottom right corner of each page. The child can eye gaze or gesture to the marker indicating the need to "turn the page".

ADAPTIVE PLAY ACTIVITY

18-24 month level

Purpose: To pretend play by performing actions on dolls and other people.

Activity:

- Sit and work one-on-one or in a group with the child.
- Provide the child with dolls and appropriate accessories for activities (i.e., dishes, comb, brush, bottle, diapers, etc.)
- Demonstrate pretend play by performing activities with the doll.
- Encourage the child to begin playing independently and acting out activities that occur in their daily routine (i.e., bathing, dressing, eating, and grooming) using the doll and others as participants in their play.

Special Considerations:

For the child who is physically unable to participate due to motor difficulties or inability to speak (inability to request items needed or comment on what is happening):

- use miniature or actual size objects and attach them to an eye gaze board, communication vest or piece of wood or cardboard, using velcro or glue. The eyegaze board will allow the child torequest items for play or comment on what is happening in the activity.
- take photographs of the actual items and place them in a photo album to be utilized for requesting or commenting.
- use the velcro bracelet or mitt and attach velcro to objects to allow the child to pick-up or grasp the objects for play (magnets may also be used).
- use picture overlays on voice output communication devices (i.e. Wolf, Introtalker, Macaw, etc.) to allow for speech output during play.

ADAPTIVE PLAY ACTIVITY

18-24 month level

Purpose: To string beads together.

Activity:
- Provide the child with beads and string or popbeads.
- Encourage the child to interact independently with the beads and to explore how to manipulate them in various positions to place the string through the hole.
- If the child is unable to figure it out independently, then caregiver can model how to put the beads on and how to pull them off the string.

Special Considerations:

For the child who is physically unable to perform this task:
- use pipe cleaners or clothesline in place of string to enable the child to string beads using a less precise grasp and with less accuracy needed.
- dip the last three inches of the string into glue and let dry - this makes a natural "needle" for the child who is able to use a gross grasp or digital grasp
- stabilize bead with dual lock while attaching other beads or placing string thru the hole
- use very thick string and larger beads

Normal Development
24-30 Months

Motor

- refinement of skills from the foundation laid in the first 24 months
- jumps in place
- pedals a tricycle
- draws, copies vertical and horizontal lines
- throws a ball
- stands on one foot
- walks on tip toes

Receptive Language

- points to four action words in pictures
- understands the concept of one
- understands size concepts
- responds to simple questions
- identifies four objects by function
- understands location phrases

Expressive Language

- talks more in play around other children
- uses three word phrases frequently
- uses action words
- refers to self by pronoun consistently
- uses negation
- names one color
- speech is 50% intelligible to the unfamiliar listener

Play

- demonstrates parallel play with other children
- chooses toys selectively
- uses two toys or play activities together in pretend play
- enjoys coloring and drawing activities

ADAPTIVE PLAY ACTIVITY

24-30 month level

Purpose: Development of the child's coloring and pre-writing skills.

Activity:
- Give the child writing instruments (crayons, paint brushes, chalk) and allow them to make marks on paper.
- Parent may model or give assistance initially to demonstrate repetitive scribbles, both horizontal, vertical, and circular scribbles.

Special Considerations:

For the child who is unable to stabilize the paper they are writing on, several possibilities exist:
- clip paper up to easel or slant board (see "how-to" section, page 44)
- use clipboard when writing at table top
- tape paper to tabletop or onto wall
- place dycem under paper

For the child who has difficulty maintaining grasp on a writing instrument, use:
- built up handle using cylindrical foam, putty, clothespin or plastic golf ball
- universal cuff, splint, or writing aids
- practice grasp and applying pressure using ink stamps

ADAPTIVE PLAY ACTIVITY

24-30 month level

Purpose: Use two toys or play activities together for pretend play.

Activity:

- Provide the child with toys that require two items to complete a task (i.e., drum and stick, two cymbals, etc.).
- Demonstrate how the two toys can be used together and what action comes from their use.
- Give the toys to the child and allow them to explore and combine the toys for a purpose.

Special Considerations:

For the child who is physically unable to use toys due to motoric difficulties:

- use a C-clamp or dicem to stabalize one toy so that the child can use his/her better hand to grasp the other toy
- place velcro on the toys and put velcro bracelet or mitt on the child's hands to help their grasp
- the caregiver can assist the child with stabalizing one object on the child's more affected side

ADAPTIVE PLAY ACTIVITY

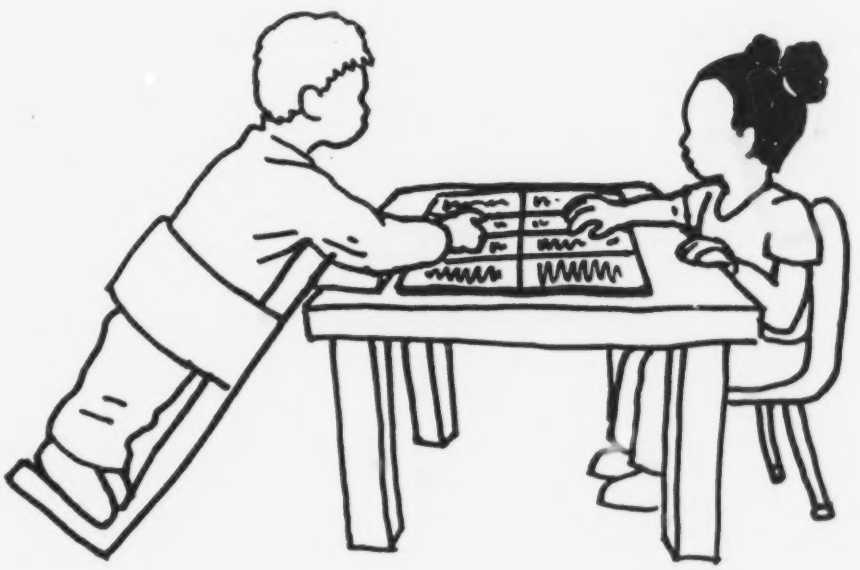
24-30 month level

Purpose: Demonstrate parallel and group play with others.

Activity:
- -The child should be placed in a group setting with one or more peers
- Give the child the opportunity to play freely with guidance in turn taking, requesting objects appropriately, and in social commenting during play.

Special Considerations:

For the child who is physically involved and non-verbal, adaptations to the activity can be made:
- if the child is in a wheelchair, use an alternate means of seating to get the child on the same level as his or her peers. For example: if the children are on the floor, place the child in a feeder seat or floor sitter. If the children are seated at a table, place the child in a bolster chair or a prone stander which leans onto the table top.
- use picture symbols, which represent turn taking, social comments ("that's pretty", "oh no", "I want more", etc.), or objects, for a voice output device, picture communication board, unicorn board, or dial scan for access by the child.



Normal Development
30-36 Months

Motor

- kicks a ball
- catches a ball
- jumps forward
- hops
- copies a circle
- unbuttons
- towers nine to ten cubes

Receptive Language

- follows two step unrelated commands
- understands the concepts of one and all
- identifies parts of an object
- responds to "wh-" questions

Expressive Language

- answers questions with yes or no
- uses prepositions and plurals
- states gender
- states first and last name
- converses in sentences
- counts to three
- speech is 90% intelligible to the unfamiliar listener

Play

- pretend play is now accomplished
- acts out familiar routines
- uses one object to represent many objects
- performs longer sequences of play activities
- uses a doll as a playmate

ADAPTIVE PLAY ACTIVITY

30-36 month level

Purpose: Act out familiar routines.

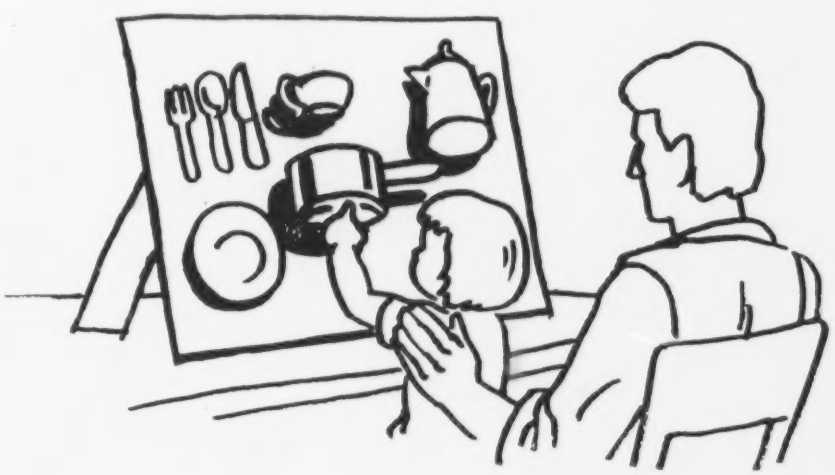
Activity:

- Set up situations or opportunities for the child to act out familiar routines by providing toys that coincide with routines in the childs environment (i.e. washing machines, kitchens, shopping carts and play food, etc.)
- Interact with the child during these routines allowing them to play your role as caregiver and you as the child or participant. This allows for increasing imagination!

Special Considerations:

For the child who is physically involved who is non-verbal , the following adaptations can be done:

- dicem to stabilize objects
- items suspended on a vertical board for easier access
- picture symbols on overlays can be made for each activity. If the child is physically unable to participate, they can use overlays to give directions to be carried out by others
- voice output communication devices, computers and peripherals such as the Unicorn Board or Intellikeys can be set up with overlays to access during play, providing the nonverbal child speech output



ADAPTIVE PLAY ACTIVITY

30-36 month level

Purpose: Utilize one object to represent many objects.

Activity:

- The child is given several objects.
- The caregiver demonstrates how one object can be used in many different ways to represent many different functions (i.e., use a shovel as a spoon, hammer, or to beat on a drum).
- The child is then given the objects to explore and to increase their imagination in terms of creative play.

Special Considerations:

For the child with physical difficulties and who is non-verbal, the following adaptations can be made:

- aide in grasping through velcro mitts, hand over hand, etc.
- use communication devices or picture boards to let the child tell the cargiver what they are doing, or to instruct the caregiver what to dowith the object

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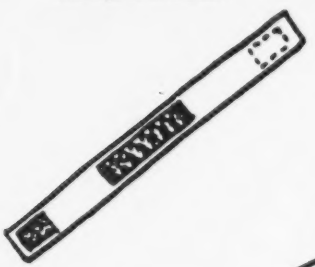
"How-To"

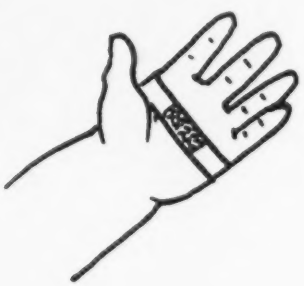
IDEAS

VELCRO BRACELET

Equipment

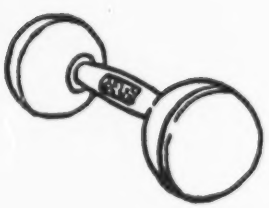
- hook and loop velcro (stickyback)
- 1/2 inch elastic long enough to wrap around child's hand one time with overlap of one inch





Description

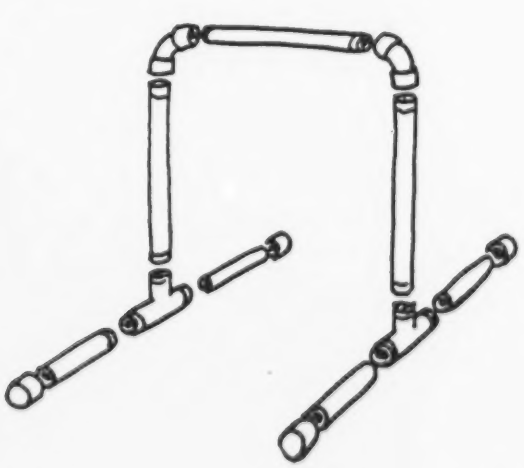
- sew a one inch piece of hook velcro to one end of elastic and a one inch piece of loop velcro to the other end
- sew a two inch piece of hook velcro at the middle of elastic
- stick a piece of loop velcro onto the toy that the child wishes to play with to allow for grasping



PVC BABY GYM

Equipment

- PVC pipe 2 inches in diameter
- two elbow joints
- two "T" joints
- four caps
- heavy duty string



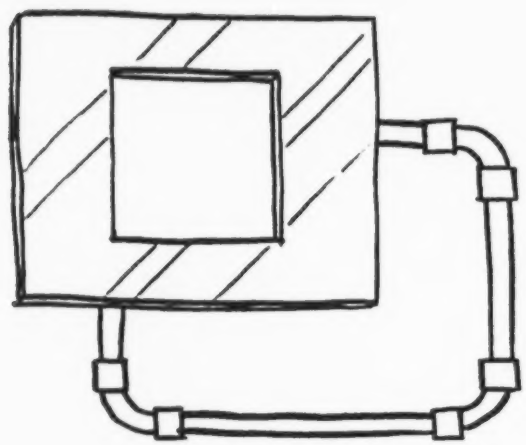
Description

- Cut the PVC pipe in three different sections two to three feet in length for the top and two sides of the gym
- Cut four pieces of the PVC pipe into 10 to12 inch sizes
- Connect the pieces together using the elbow joints, "T" joints , and caps as shown in the diagram
- use heavy duty string to tie toys to the frame

EYE-GAZE BOARD FOR WHEELCHAIR TRAY

Equipment

- 1/2 inch PVC pipe
- Plexiglass
- Velcro stickyback (hook and loop)
- four elbow joints



Description

- Cut one piece of PVC 18" long
- Cut two pieces of PVC 12" long
- Cut two pieces of PVC 8" long
- Cut plexiglass 20" x 14" tall to form a rectangle
- Cut out the middle of the plexiglass in a rectangle 12" x 6" tall for the child's communication partner to view the child's picture selections
- Place picture communication symbols around the plexiglass with velcro
- Put the frame together as shown in the diagram and attach the plexiglass to the frame then velcro to the under side of the child's wheelchair tray

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LOOP TAPE MESSAGES

Equipment

- buy a 10, 15, or 20 second loop tape (answering machine tape) from Radio Shack
- tape recorder with a remote jack
- switch (any type)
- plug adaptors if necessary
- picture communication symbol corresponding to the message (i.e., "turn the page" needs a picture symbol of turn the page)

Description

- place loop tape in tape recorder and tape your message
- repeat the message during recording for the number of seconds on the tape (i.e., "turn the page", etc.)
- place the switch in the remote jack of the recorder, push down the play button
- the switch now controls on/off
- put the picture symbol on the switch for a visual cue of the message

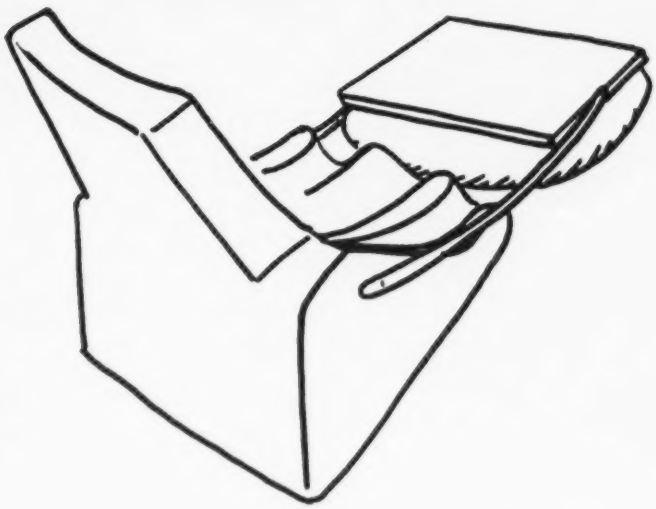
HOMEMADE TRAYS FOR FEEDER SEATS

Equipment

- purchase a lap desk with bean bag bottom
- velcro stickyback (loop and hook)
- have feeder seat available

Description

- cut two pieces of loop velcro 2" in length and place on left and right sides of the center of the desk
- cut two pieces of loop velcro 3" in length and stick to each side of the feeder seat
- cut a piece of hook velcro long enough to reach across tray and down to the velcro on the side of the feeder seat
- attach the hook velcro to the loop on the desk and lay tray across child's lap and attach to the velcro on the side of the seat



MOBILES FOR CRIBS

Equipment

- elastic or ribbon
- bright colored objects
- rattles or other noise makers
- small hand mirrors
- textured objects

Description

- cut off enough ribbon or elastic to reach across the crib
- tie four to six toys varyingdostamces from the baby's reach to the ribbon/elastic
- movement or voice activated toys

MERCURY SWITCH

Equipment

- Mercury Bulb (radio shack)
- 12 inches of 22 guage speaker wire
- 1/8 inch miniature phone jack (female)
- solder
- solder iron
- hot glue and glue gun
- film canister or pill bottle
- cotton or tape to hold mercury tightly in container
- wire strippers

Description

- split speaker wire on both ends and remove plastic coating with wire strippers
- solder one end of wire to the end of mercury bulb onto the two prongs
- make a hole in top of the canister or bottle and glue the end of the mercury bulb that is not attached to the wire to the bottom of the bottle
- run the wire through the hole of the bottle top
- stuff cotton inside bottle around bulb or tape bulb to one side of the bottle inside
- Place the covering of the phone jack over unsoldered end of the wires with treads facing the unattached end
- Solder the loose ends of the wire on the terminals of the miniature phone jack. **DO NOT** let the wires contact with each other
- Screw the phone jack covering around terminals
- attach the container to a hair clip and put on child's head in a vertical direction for the mercury to fall and activate the toy

---

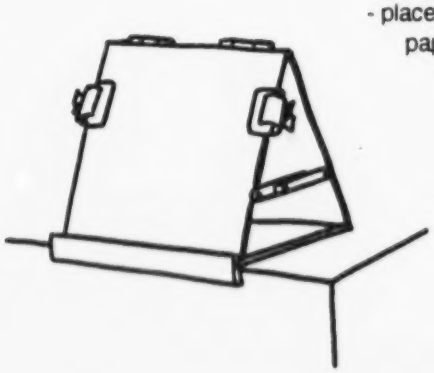
HOMEMADE SLANT BOARD

Equipment

- wood or corrugated cardboard
- nails, hammer
- glue
- wide paper clamps
- electic hand jigsaw

Description

- cut wood or cardboard following pattern example below
- glue or nail pieces together
- place clamps on top or at sides (to stabilize paper or books)



CONSTRUCTING A PING PONG BALL SWITCH

Equipment

- Submini level switch from Radio Shack
- 1 1/2 inch Marvel Connector from Lowes
- 1 Ping Pong Ball
- Enclosed Phone Jack from Radio Shack
- 10 inches of 27 gauge speaker wire
- Hot glue gun with hot glue
- 1 1/2 inch round section of cardboard
- Soldering iron with rosin core solder
- 3/4 inch drill bit and drill

Description

1. Using the base of the Marvel Connector, drill a small hole into the side of the piping. This should be large enough to pass the stereo cable through.

2. Attach the level switch to one end of the speaker wire by:
   a. Separating one inch of cable at the end of the wire.
   b. Remove 1/4 inch of plastic coating at the end of the separated wire.
   c. Solder the exposed wire to the hot metal connections of the switch.

3. Thread the opposite end of the stereo cable through the inside of the Marvel Connector hole previously drilled. the lever switch is now free floating inside the Marvel Connector.

4. Using the other end of the wire, attach the male phone jack by:
   a. Separating one inch of stereo cable.
   b. Strip the last 1/4 inch of the wire exposing a small portion of wire as in Step 2.
   c. Remove the cap of the male phone jack, unscrew the plastic cap to reveal two connections to be made. We will find two small holes in which to thread the remaining exposed speaker wires. (Don't forget to put the plastic cable on the wire prior to soldering the phone jack connection).

5. Thread the wires through the holes inside to the outside and lightly solder in place. CAUTION: Too much solder will obstruct the replacement of the phone jack's plastic cap.

6. Replace plastic cap.

7. Using the 1 1/2 inch round cardboard, stabalize the soldered lever switch via hot glue into the carboard circle. NOTE: The widest part of the lever switch connection should be centered within the Marvel Connector.

8. Stabilize the lever switch and cardboard circle to the base of the Marvel Connector by hot glue both inside and outside for durability.

9. Place the ping pong ball switch inside the Marvel Connector. Replace the plastic Marvel Connector's Washer with the last step being replace the Marvel Connector's screw on top.

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CONSTRUCTING A BATTERY ADAPTER FOR A BATTERY-POWERED TOY

Equipment

- Double-sided copper clad board
- 1/8" miniature phone jack (female)
- Soldering iron
- Solder
- 22 gauge speaker wire
- Wire cutters/strippers
- Metal cutters
- needle-nose pliers

Description

1. Cut a piece of copper clad board slightly smaller than the end of the battery.

2. Cut double stranded speaker wire 4 inches long (longer if desired).

3. Split each end of the wire approximately 1 inch.

4. Strip the wire coating on both ends of the wire approximately 1/4 to 1/2 inch.

5. Solder one end of the wire to each side of the copper clad board. Put the wires on opposite ends of the copper to keep the wires from touching.

6. Place the covering of the phone jack over unsoldered end of the wires with treads facing the unattached end.

7. Solder the loose ends of the wire on the terminals of the miniature phone jack. **DO NOT** let the wires make contact with each other.

8. Screw the phone jack covering around terminals.

9. Insert the copper end of the battery into the battery compartment at the end of one battery. A notch may need to be cut into the battery compartment cover to allow the wire to pass through to the switch interface.

10. The on-off switch of the battery-operated toy must be turned to the ON position to be controlled by the switch interface.

Adapted from: Goossens', C., & Crain, S. (1986). Augmentative Communication Assessment Resource. Sparks Center for Developmental and Learning Disorders, Birmingham, Alabama pp. 140-142.

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NEWSLETTERS

Augmentative Communication News, Cost: $40.00; Editor: Sarah W. Blackstone, PhD; One Surf Way, Suite #215, Monterey, CA 93940 (408)649-3050

Carolina Parent, Cost: free; Publication of News and Observer; 103 West Main Street, Suite 210, Durham, NC 27701, (919)956-2430

Closing the Gap, Cost: $27.00/year; Published by Delores and Bud Hagen. P.O. Box 68, Henderson, MN 56044 (612)248-3824

Communicating Together, Cost: $17.00; Publication of Easter Seal Communication Institute; Editor: Ann Kennedy; 350 Rumsey Rd., Toronto, Ontario, Canada M4G 1R8 (416)242-9114

Communication Outlook, Cost: $12.00; Publication of Artificial Language Lab; Editor: Tamara Redburn; Computer Science Department, Michigan State University, East Lansing, MI 48824

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ISAAC Bulletin, Cost: $20.00; Publication of Special Education, Purdue University Editor: Lyle Lloyd; Special Education, Purdue University, SCC-E, Room 54, West Lafayette, IN 47007 USA

NCACA Newsletter, Cost: $15.00 (price of membership fee into NC Augmentative Communication Association); Published by Gracie Williams, P.O. Box 54, Bethania, NC 27010

Team Rehab Report, Cost: $24/year; Published by Miramar Publishing Co; PO Box 3640 Culver City, CA 9023-3640 (310)337-9717

TechniCable, Cost: Free; Publication of NC Assistive Technology Project; 1110 Navaho Dr., Suite 101, Raleigh, NC 27609 (919)850-2787

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The Learning Company
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(800)852-2255

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Carolina Literacy Center
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Chapel Hill, NC 27599-8135
(919) 966-7486

Center for Development and Learning
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University of North Carolina
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(919) 966-5171

Eastern Regional Assistive Device Center (ERADC)
2415 West Vernon Ave.
Kinston, NC 28501
(919) 559-5100

Family Support Network
1-800-852-0042

Irene Wortham Center
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Asheville, NC 28813
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Lenox Baker Childrens Hospital
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